

Evaluation of Obesity Among Diabetes Mellitus Patients Visited to Hospital

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ABSTRACT

Background: Obesity is becoming a major public health problem all over the world due to its link with diabetes, hypertension and other disorders related to metabolic syndrome. The present cross-sectional study was conducted to assess obesity in Diabetes mellitus patients.

Material and methods: The present cross-sectional study was conducted to assess obesity in Diabetes mellitus patients. 180 patients (90 males and 90 females) who were already diagnosed with Type 2 diabetes mellitus participated in the study. All the information about the subjects was obtained through the questionnaires. Fasting blood samples were collected. BMI of the study population was calculated. The recorded data was compiled, and data analysis was done using SPSS Version 20.0 (SPSS Inc., Chicago, Illinois, USA). P-value less than 0.05 was considered statistically significant.

Results: In the present study 180 Diabetic patients were included in which 90 patients were males and 90 patients were females. 3.88% patients were underweight, 47.22% patients were normal, 35% patients were overweight and 13.88% patients were obese. In males 3.33% were underweight, 64.44% were normal, 44.44% were overweight and 8.88% were obese. In females 4.44% were underweight, 30% were normal, 37.77% were overweight and 18.88% were obese.

Conclusion: The present study concluded that 35% Diabetic patients were overweight and 13.88% patients were obese. In diabetic patients overweight was more in males and obesity was more in females.

KEYWORDS: Diabetes, Overweight, Obesity, Underweight.

INTRODUCTION

Obesity is the major potentially modifiable risk factor for type 2 diabetes.¹ Diabetes mellitus is one of the most common endocrine disorders in the world. The prevalence of diabetes has been increasing globally and the disease has become one of the major public health concerns. According to World Health Organization (WHO), diabetes affects more than 170 million people worldwide and the number will rise to 370 million by 2030, World health organization 2004. The recent update of WHO has updated that diabetes, hypertension, and obesity are one of the top five continuing risk factors for cardiovascular deaths in the world, (World Health Organization, 2009).² Obesity in persons with diabetes is associated with poorer control of blood glucose levels, blood pressure, and cholesterol^{3,4}, placing patients at

higher risk for both cardiovascular and microvascular disease⁵. Obesity is a complex disorder involving appetite regulation and energy metabolism, as the excess of body fat results from an imbalance of intake and expenditure.⁶ The present cross-sectional study was conducted to assess obesity in Diabetes mellitus patients.

MATERIALS AND METHODS

The present cross-sectional study was conducted to assess obesity in Diabetes mellitus patients in Department of General Medicine, B.V.V. Sangha's S Nijalingappa Medical College & H.S.K. Hospital & Research Centre, Bagalkot, Karnataka, India. Written consent was taken from the patients after explaining the study. 180 patients (90 males and 90 females) who were

already diagnosed with Type 2 diabetes mellitus participated in the study. All the information about the subjects was obtained through the questionnaires. Fasting blood samples were collected for serum glucose estimation.

For the assessment of BMI, height was measured to the nearest centimeter using an anthropometric rod with the subject standing erect on the floor with the back against a vertical mounted ruler. Weight of the subjects was measured on a prestandardized scale to the nearest 100 g. BMI of the study population was then calculated using the formula, weight in Kilogram (kg) divided by height in square of the meter (m²). The recorded data was compiled, and data analysis was done using SPSS

Version 20.0 (SPSS Inc., Chicago, Illinois, USA). P-value less than 0.05 was considered statistically significant.

RESULTS

In the present study 180 Diabetic patients were included in which 90 patients were males and 90 patients were females. 3.88% patients were underweight, 47.22% patients were normal, 35% patients were overweight and 13.88% patients were obese. In males 3.33% were underweight, 64.44% were normal, 44.44% were overweight and 8.88% were obese. In females 4.44% were underweight, 30% were normal, 37.77% were overweight and 18.88% were obese.

Table 1: Prevalence rates of overweight and obesity

BMI (kg/m ²)	N (%)
Underweight (<18.50)	7(3.88%)
Normal (18.50 - 24.99)	85(47.22%)
Overweight (25.00 - 29.99)	63(35%)
Obese (≥30.00)	25(13.88%)

Table 2: Comparison of range of BMI in male and female patients.

BMI (kg/m ²)	Gender	
	Male N (%)	Female N (%)
Underweight (<18.50)	3(3.33%)	4(4.44%)
Normal (18.50 - 24.99)	58(64.44%)	27(30%)
Overweight (25.00 - 29.99)	40(44.44%)	34(37.77%)
Obese (≥30.00)	8(8.88%)	17(18.88%)

DISCUSSION

The association between degree of obesity, body fat distribution and weight gain with subsequent occurrence of type 2 diabetes has been examined in several prospective studies. Increased BMI is now a well established independent risk factor for the development of type 2 diabetes.^{7,8}

In the present study 180 Diabetic patients were included in which 90 patients were males and 90 patients were females. 3.88% patients were underweight, 47.22% patients were normal, 35% patients were overweight and 13.88% patients were obese. In males 3.33% were underweight, 64.44% were normal, 44.44% were overweight and 8.88% were obese. In females 4.44% were underweight, 30% were normal, 37.77% were overweight and 18.88% were obese.

Ruderman et al., in 1981, derived the concept of metabolically obese normal weight, for whom BMI is normal but having deranged metabolic parameters like

dyslipidemia and elevated blood sugar.⁹ The prevalence of metabolic syndrome is four times higher in normal-weight obesity (NWO) individuals than the normal population.¹⁰

A high prevalence of obesity was noted in females than in males. These results are in accord with those reported from both in general population and among patients with T2DM conducted in India.¹¹

A study by Bays et al. depicted an association between increased BMI and increased prevalence of diabetes which was highest among morbidly obese individuals.¹²

A study by Ahmed et al. showed that 67% of the patients with diabetes mellitus had BMI ≥ 25 kg/m².¹³

Shera et al. showed that 61% of the diabetics had BMI ≥ 25 kg/m².¹⁴

However, slightly higher prevalence was reported by Joseph et al., the majority (83%) of the type 2 diabetic patients were either overweight or obese.¹⁵

CONCLUSION

The present study concluded that 35% Diabetic patients were overweight and 13.88% patients were obese. In diabetic patients overweight was more in males and obesity was more in females.

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